



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,092	06/15/2001	Kiril A. Pandelisev	PHOENIX SCIENTIFIC	7264

7590 03/08/2004

James C. Wray  
Suite 300  
1493 Chain Bridge Road  
McLean, VA 22101

EXAMINER

VINCENT, SEAN E

ART UNIT	PAPER NUMBER
----------	--------------

1731

DATE MAILED: 03/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/881,092

Applicant(s)

PANDELISEV, KIRIL A.

Examiner

Sean E Vincent

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-103 and 105-148 is/are pending in the application.
- 4a) Of the above claim(s) 1-77 and 109-118 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 78-103, 105-108 and 119-148 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 78-83, 85, 88-93, 95-97 and 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nath (EP 127956) in view of Leber et al (US 4923497).
3. Nath taught methods of producing silica grains in a chamber with gas inlets and outlets and a vacuum line by directing silica precursor gases into an Argon RF plasma and collecting pure or doped silica powder in collectors (see abstract, Figures 1 and 2, page 4, line 18 to page 6, line 2 and examples 1, 3 and 4). Nath disclosed further in-mold sintering, but did not teach softening or agglomerating the powder. Leber et al taught methods of continuous production of tubes or rods of silica wherein silica powder was fed to and heated within a crucible in a protective argon-hydrogen atmosphere to soften and flow the silica through an annular passage around a shaping tool and draw the silica into tubes or rods (see the figure, col. 2, lines 42-60 and col. 3, lines 3-52). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the powder of Nath within the process of Leber et al because: a) Nath taught that its glass powders could be later formed into any shape necessary and b) Leber et al taught that its continuous method was advantageous over non-continuous methods.
4. With regard to claim 80, Nath taught that the collecting plate 20 could be raised or lowered, but did not teach rotating the plate. It would have been obvious to a person of ordinary

Art Unit: 1731

skill in the art at the time the invention was made to rotate the plate of Nath because it would have helped to maintain an even powder deposit.

5. With regard to claim 81, Nath did not teach that the vacuum line was valved. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a valve in the vacuum line of Nath because valves are very well known in the plasma glass deposition arts.

6. With regard to claims 79 and 82, Nath did not state specifically that the plasma was centered above the collection plate. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to center the plasma above the collection plate because it would have been expected that a centered plate would hold more powder.

7. With regard to claim 92, Nath did not teach that the collector plate was heated or passing gases through the glass powder on the plate. Leber et al taught that its crucible was heated and that protective gases were passed through the glass powder while heating. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the heating technique of Leber et al to the powder of Nath because Leber et al taught that it would produce glass with less imperfections.

8. With regard to claim 105, Nath did not teach microwave plasma heating. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use microwave instead of RF because the different heating methods are considered equivalents (see above "Election/Restriction")

9. Claims 119-125, 127, 129-138 and 142-144 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leber et al in view of Röss et al (US 5049175).

Art Unit: 1731

10. Leber et al taught methods of continuous production of tubes or rods of silica wherein silica powder was fed to and heated within a crucible in a protective argon-hydrogen atmosphere to soften and flow the silica through an annular passage around a shaping tool and draw the silica into tubes or rods (see the figure, col. 2, lines 42-60 and col. 3, lines 3-52). Resistance and inductance heating were disclosed. Electrical field application was disclosed. Leber et al did not teach supplying doped and undoped silica particles to a collector. Röss et al taught methods of providing fused silica grains by controllably feeding grains of silica and various dopants to a granular body on a rotating support and heating to vitrify the grains and stabilize the shape of the granular body (see abstract, figures, col. 1, lines 55-60 col. 6, line 48 to col. 7, line 5 and col. 7, lines 26-32). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use granule mixtures from Röss et al in the method of Leber et al because Röss et al taught that any desired cross-sectional distribution could be achieved.

11. Leber et al did not teach actively controlling the pressure in the crucible. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to control the pressure because Leber et al was concerned with maintaining a protective atmosphere and exhausting gas in connection 12 was illustrated. The further step of actively controlling the pressure would have required no more than pressure monitoring and adding a valve to connection 12, both of which were very well known in the art of silica vitrification. Note that another connection, not shown, was disclosed to exhaust gases from the bottom end of the crucible.

Art Unit: 1731

12. With regard to claims 124 and 125, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use microwave plasma or RF heating in Leber et al because they were considered equivalent to the resistance heating disclosed.

13. With regard to claim 132, Leber et al clearly discloses "tube or rod" formation. While no specific embodiment is disclosed in Leber et al for tube formation, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Leber et al to make tubes. Note that an obvious modification to the tool 5 and rod 6 of Leber et al's figure 1 would have been expected as was previously known in Gray and Jenkins et al (cited by applicant). The obvious modification would have been to make the tool and rod of Leber et al hollow.

14. With regard to claim 138, Leber et al does not disclose concentric ring electrodes because it does not disclose that the tool 5 is hollow (see above). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use concentric ring electrodes in Leber et al because the obvious modification to the tool 5 to make tubes instead of rods would have necessarily resulted in concentric ring electrodes.

15. With regard to claim 144, Leber et al does not disclose connecting a purging or dopant injector to the tool 5 (see above). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to make such a connection with the purging gas already disclosed by Leber et al because the obvious modification to the tool 5 to make tubes instead of rods would have made the previously known gas injection of Gray and Jenkins et al (cited by applicant) necessary for tube production.

Art Unit: 1731

16. Claims 84, 86 and 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nath and Leber et al as applied to claim 82 above, and further in view of Mansfield (US 4689212).

17. Nath and Leber et al failed to disclose particle injection into a plasma. Mansfield taught that doped silica could be produced by a plasma burner fed with solid silica and dopant material or with solid dopant material and gaseous silica precursors (see figures, abstract and col. 2, lines 5-36; col. 3, lines 17-48; col. 4, lines 14-49 and col. 4, line 62 to col. 5, line 27). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate solid feed materials into the method of Nath because Mansfield taught that dopants could be easily added directly to the plasma.

18. Claim 128 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leber et al and Röss et al as applied to claim 119 above, and further in view of Mansfield.

19. Leber et al and Röss et al failed to disclose providing silica particles from burners. Mansfield taught that doped silica could be produced by a plasma burner fed with solid silica and dopant material or with solid dopant material and gaseous silica precursors (see figures, abstract and col. 2, lines 5-36; col. 3, lines 17-48; col. 4, lines 14-49 and col. 4, line 62 to col. 5, line 27). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the burners of Mansfield in the methods of Leber et al and Röss et al because Mansfield taught that dopant concentrations were easily controlled.

***Allowable Subject Matter***

Art Unit: 1731

20. Claims 94, 98-103, 106-108, 126, 139-141 and 145-148 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or fairly suggest methods of producing silica grains as claimed wherein any of the following features are claimed:

- a. a second vacuum chamber below the first chamber
- b. multiple or distinct heat zones heated to different temperatures
- c. gas plasma surface removal subsequent to pulling
- d. a second chamber for reforming silica from the first chamber
- e. a second crucible beneath the heated throat of the first crucible.

It would not have been obvious to modify the prior art to have any of these features.

### ***Response to Arguments***

22. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The case law cited by the applicant only reinforces the above statements. It is the position of the



Art Unit: 1731

examiner that the motivation statements that were part of the prior art rejections established ample motivation. The applicant has yet to address those statements directly.

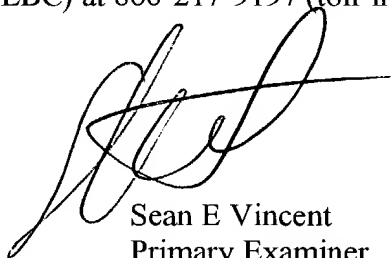
***Conclusion***

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

24. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean E Vincent whose telephone number is (571) 272-1194. The examiner can normally be reached on M - F (8:30 - 6:00).

25. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven P Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

26. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sean E Vincent  
Primary Examiner  
Art Unit 1731

S Vincent